NOAA FISHERIES

Watershed Program Overview

The Watershed Program conducts research on the ecology and management of freshwater and estuarine ecosystems to assist with the protection of salmon and other fishes.

Program scientists provide technical support to NOAA Fisheries policy makers and regulatory staff, and collaborate with other agencies, tribes, and educational institutions on research and outreach related to the management of Pacific salmon *(Oncorhynchus spp.)* and their habitats.

The Watershed Program has two research teams:

- The Ecosystem Processes Team quantifies effects of natural or human disturbance on watersheds and river ecosystems.
- The Restoration Effectiveness Team evaluates effectiveness of various habitat restoration strategies.

Research in each of these areas informs recovery planning for species of Pacific salmon and steelhead listed under the Endangered Species Act (ESA).

Ecosystem Processes Team

Successful recovery of ESA-listed fishes in the Pacific Northwest depends on understanding how human actions influence the health of riverine ecosystems and salmon populations.

To address this issue, the Ecosystem Processes Team provides three types of tools that help managers understand how land use policies, water use policies, and river restoration efforts affect salmon populations. These tools include basic research that quantifies effects of land and water uses on habitat availability and stream productivity, models that relate changes in habitat quantity or quality to salmon survival and abundance, and detailed physical and biological models to predict how salmon populations will respond to land use changes or river restoration efforts. Each of these tools are used to improve land use practices, develop new restoration techniques, and inform recovery planning for listed salmonids in the Pacific Northwest.

Our near-term research objectives include:

- Broad-scale relationships among land uses, food webs, and fish populations.
- Aquatic ecology and watershed-scale management practices in urban, agriculture, estuary, and other lowland systems.
- Dynamics of floodplain ecosystems, and responses to land use or restoration actions.
- Channel incision and restoration options in the interior Columbia River basin.
- Development of habitat-based salmon population models.
- Effects of changes in habitat quality on salmonid abundance, movements, and survival.

Principal investigators for the team include Tim Beechie (Supervisor), Correigh Greene, Jason Hall, Peter Kiffney, Michael Pollock and Casey Rice.

Restoration Effectiveness Team

The Restoration Team focuses on understanding how site-specific and watershed-wide restoration actions affect watershed processes, stream productivity, the formation and maintenance of habitat and the growth and survival of salmonids. This research is directly linked with the life cycle models developed by the Ecosystem Processes Team. This approach provides the foundation for evaluating the effects of different restoration activities on stream productivity and salmon populations, identifying which types of restoration actions are most effective, and specifying where restoration will have the greatest long-term benefits in salmon production.


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Our near-term research objectives include:

- Restoration of large rivers: influence of engineered logjams in large rivers on primary productivity and fish response.
- Floodplain restoration: comparison of natural to constructed floodplain channels.
- Dam removal: effects of changing sediment supply on habitat formation and biological response.
- Small stream restoration: effects of wood and boulder placement on primary productivity and fish in small streams.

Interdisciplinary staff of scientists and principal investigators for the team include George Pess (Supervisor), Todd Bennett, Karrie Hanson, Martin Liermann, Sarah Morley and Phil Roni.


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For more information on:

Watershed Program research and a complete list of ongoing projects visit our website at http://www.nwfsc.noaa.gov/research/divisions/fed/wpg/index.cfm

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Learn more:

Sharing our work with other scientists, with policymakers, and with the public is important to us. To learn more about what we do, please visit our website at www.nwfsc.noaa.gov, find us on Facebook at NOAA Fisheries Northwest, or follow us on Twitter at @NOAAFish_NWFSC. To obtain additional information, please call 206-860-3200.

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